

J-PARC Status

*** Try to enhance
updates in the last 1 year**

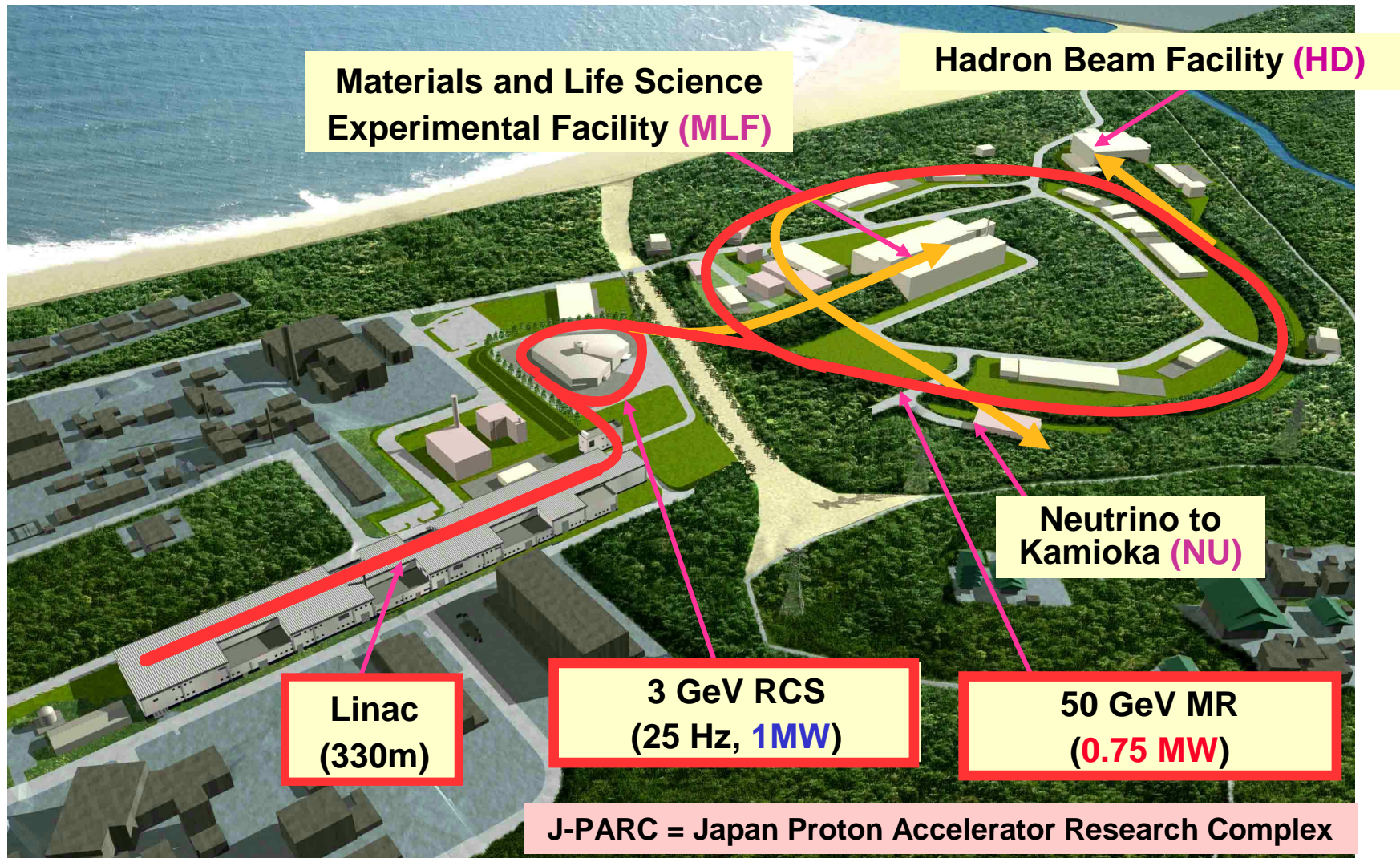
**N. Kamikubota, KEK
and J-PARC Control members**

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J-PARC

- **Japan Proton Accelerator Research Complex**
- **A joint project between JAEA* and KEK**
*JAEA – Japan Atomic Energy Agency, formerly JAERI
- **Under construction in JAEA in Tokai#, Ibaraki, Japan**
#Tokai is 60km NE of KEK-Tsukuba, 130km NE of Tokyo

J-PARC Facility

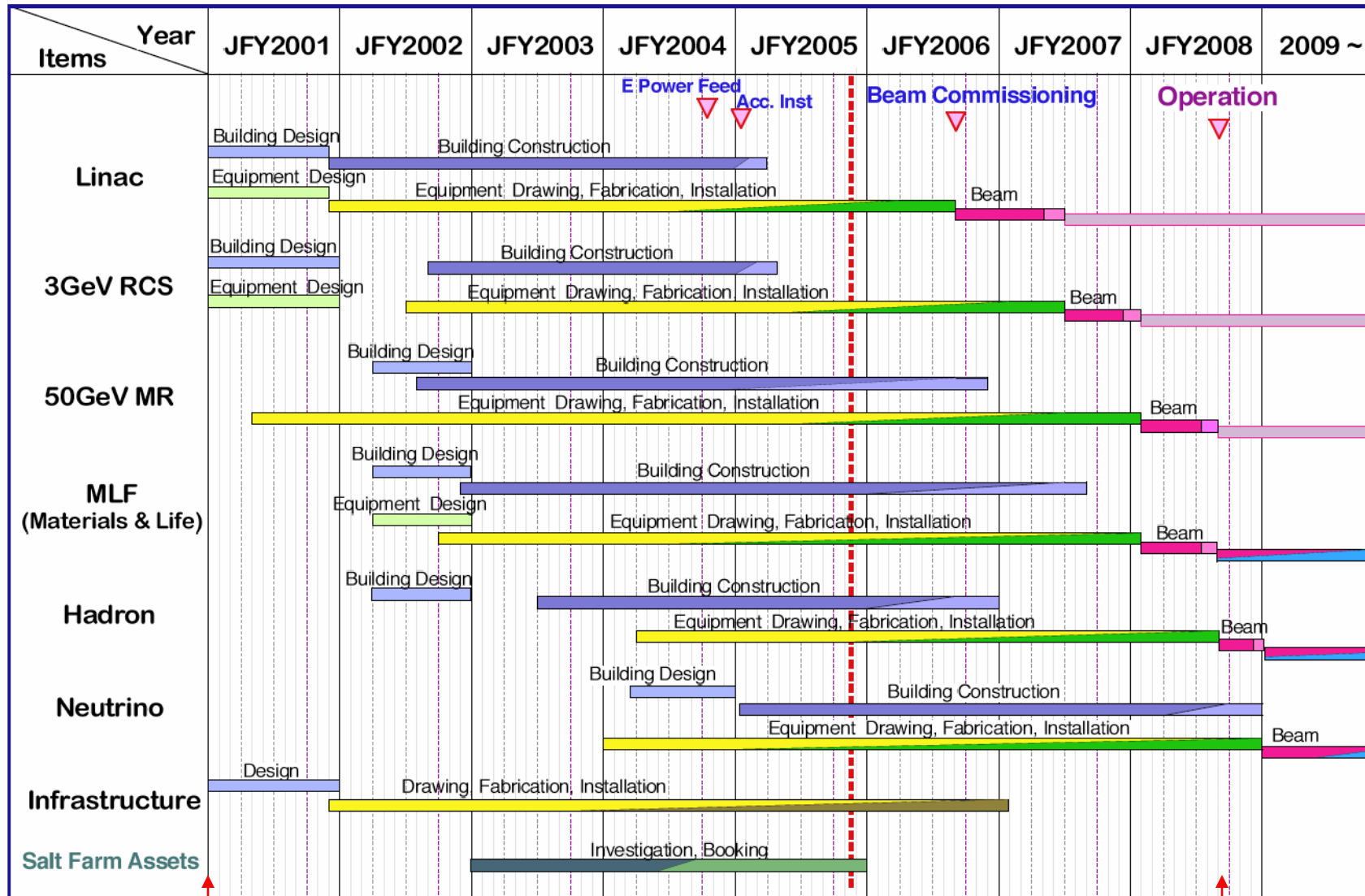


J-PARC Schedule

- **2002 - Construction started in JAEA-Tokai**
- **Oct.2006**
Linac - Various tests without beam
- **Dec.2006**
Linac - Beam operation will be started
- **Oct.2007**
3GeV RCS - Beam operation
- **May.2008**
50GeV MR - Beam operation

J-PARC Construction Schedule

Feb. 27 2006



Current

Construction
Start

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Facility
Operation

Accelerator

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Progress in the Recent 1-year

- **Linac**
 - **H/W** components have been installed
 - **S/W basic applications** are under development
- **3GeV RCS**
 - **Building construction** completed
 - **H/W installation** started
- **50GeV MR**
 - **[East] H/W installation** started
 - **[West] Building construction** still continues

Linac - 1 year Progress



(May, 2005)



(February, 2006)

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50GeV MR - Magnet Installation

**Started in
Nov. 2005**



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Control System

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J-PARC Control

- EPICS based, uses version **3.14.7**
- Collaboration between JAEA & KEK
 - **JAEA: LINAC & RCS**
 - **KEK: MR**

Accelerator	IOC		I/O
	HW	OS etc.	
Linac and 3GeV RCS	VME (~65,~25)	VxWorks PowerPC Adv7501 *	VME Modules, PLC, EMB-LAN, WE7000, WER PLC, BPMC,
50GeV MR	VME (~50)	Linux Intel-based VMIC 7807 **	WE7000, EMB-LAN (Network devices)

•* Advanet Company (Japan)

•** GE/Funac Company , not decided yet

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J-PARC Control (cont.)

- **Software Development**
 - **JAEA:** use **Java** extensively for **OPI**
 - **KEK:** use **OPI tools of KEKB**

Accelerator	OPI Application		Drivers (past works before 2005)
	Basic	High-level	
Linac and 3GeV RCS	Java	XAL jSAD	<ul style="list-style-type: none"> - VME I/O Modules mainly by Advanet - TeraDev for PLC with state-transition idea
50GeV MR	MEDM (or EDM)	SAD Python	<ul style="list-style-type: none"> (Network devices) - NetDev for PLC, BPMC, EMB-LAN - WE7000 drivers

- “**XAL** or **SAD** or **both** ?” This is a recent hot topic.
- **jSAD** is a **SAD** interpreter written in **Java** by **JAEA**

J-PARC Control (cont.)

- **RDB (PostgreSQL 7/8)**
 - **Goal is - automatic generation of :**
 - **EPICS run-time db**
 - **Config. files for Java-based OPI applications**
 - **JAEA**
 - **developed a schema for LINAC & 3GeV RCS**
 - **Tested in the L3BT subsystem**
 - **KEK**
 - **try to re-use it to generate EPICS db parameter files (dbprm) for 50GeV MR**

L3BT Control Test

- **L3BT – Linac to 3GeV Beam Transport**
 - **Magnets** (5 Bend, 70 Q, 55 Steer) by **VME IO** modules
 - **Vacuum** (Valve control) by 7 **PLCs**
- **Online Control without beam**
 - **Nov.2005-Feb.2006** by **JAEA** team
 - **EPICS 3.14.7** and **10 IOCs** (VxWorks 5.5.1)
 - **2157** PVs for **magnets**, **906** PVs for **vacuum**
 - **Linux** PCs were used as **OPIs**

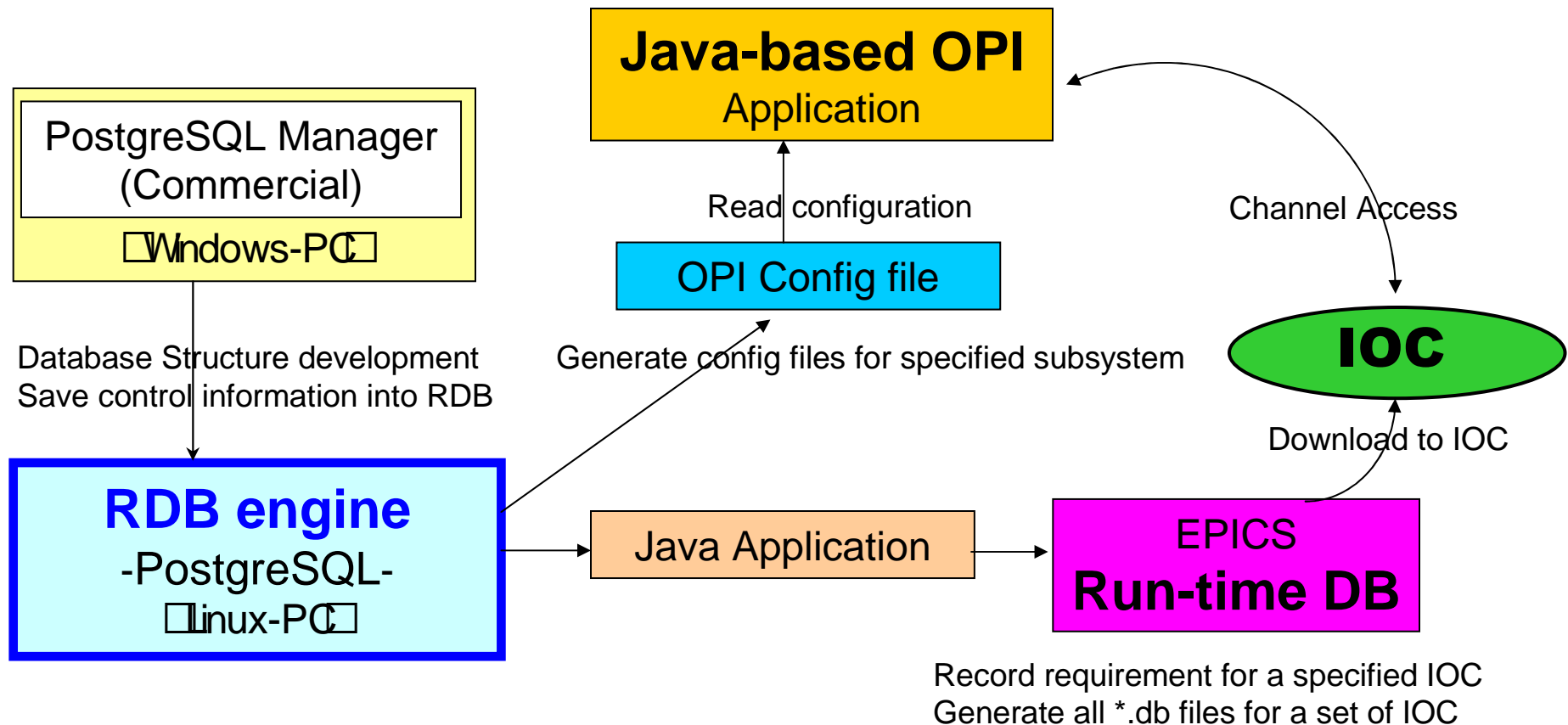
L3BT Control Test (cont.)



Nov.2005

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L3BT Control test - RDB



L3BT Control Test - Java OPI

Value Update = realtime

Value Update = realtime

Magnet P.S. Control -- BMSPS01: locate in IOC L3BT4 at L3BT01

Capture as PNG

P.S. Volt./Curr. Monitor & Adjustor

Cur. Monitor [max 13A]

Cur.Val.[A]: 6.521

Cur. Set up [max 13A]

Cur.Val.[A]: 6.5 SET

P.S. Status Monitor & Control

P.S. Status Monitor

Remote/Local	●
Run	●
Standby	●
Fault	●
Emergency	●

P.S. Status Transition

RUN ●	GO-RUN
STDBY ●	GO-STDBY
RST ●	GO-RST

Interlock

CUR.	●	VOLT.	●
P.S.	●	Link Stop	●

Value Update = realtime

Based on Java (the OPI definition files generated by RDB)

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L3BT Control Test - RDB (cont.)

SQL Manager 2005 for PostgreSQL - machinedb on localhost [machinedb] - [Table - [jparc.epics_info_device] - [machinedb on localhost]]

Database View Tools Services Options Windows Help

Create

Databases

localhost

machinedb on localhost

Schemas (3)

Linac_cable

jparc

Tables (43)

area

cable_all

cable_entity

chassis

controller

epics_ai_detail

epics_ao_detail

epics_bi_detail

epics_bo_detail

epics_calcout

epics_db_compo

epics_esub

epics_func

epics_info_device

epics_lo_detail

epics_mbbi_detail

epics_mbbid_detail

epics_rec_def

epics_signal

epics_sm_detail

interface_all

interface_conf

interface_entity

interface_revision

Field Type

facility char(3)

area char(10)

device_name varchar(64)

device_type varchar(64)

chassis_name varchar(20)

DI_OFFSET integer

DO_OFFSET integer

AI_OFFSET integer

Object

machinedb on localhost [machinedb]

jparc.epics_info_device

General

Table properties

Print

Refresh

Table Editor options

Tools

Analyze & vacuum

Cluster table

Dependency tree

Data Management

Export data

Export as SQL script

Import data

Save data

Load data

Explorer

Fields (15)

facility [char(3)]

area [char(10)]

device_name [varchar(64)]

device_type [varchar(64)]

chassis_name [varchar(20)]

DI_OFFSET [integer]

DO_OFFSET [integer]

AI_OFFSET [integer]

DI_SLOT [integer]

DO_SLOT [integer]

AO_SLOT [integer]

mc_offset [integer]

mc_slot [integer]

Foreign Keys

Checks

Indices (1)

Fields Foreign Keys Checks Indices Triggers Rules Dependencies Data Description DDL

Drag a column header here to group by that column

#	facility	area	device_name	device_type	chassis_name	DI_OFFSET	DO_OFFSET
U	BD0DEG	BAG01	BAG_T		10.16.46.132	67	13
U	BD0DEG	BLGV01	BLGV	L3BT5		58	
U	BD0DEG	CNVCT01	CNVCT_T		10.16.46.132	86	Nu
U	BD0DEG	DUMPCTRL01	DUMPCTRL	L3BT5		60	Nu
U	BD0DEG	IP01	IP_T		10.16.46.132	67	13
U	BD0DEG	IP02	IP_T		10.16.46.132	67	Nu
U	BD0DEG	IP03	IP_T		10.16.46.132	67	Nu
U	BD0DEG	LTV01	LTV_T		10.16.46.132	67	13
U	BD0DEG	PMGV01	PMGV_T		10.16.46.132	67	13
U	BD0DEG	QM01	QM	L3BT5		20	Nu
U	BD0DEG	QM02	QM	L3BT5		42	Nu
U	BD0DEG	QM03	QM	L3BT5		64	Nu
U	BD0DEG	QM04	QM	L3BT5		86	Nu
U	BD0DEG	QM05	QM	L3BT5		108	Nu
U	BD0DEG	QM06	QM	L3BT5		20	Nu
U	BD0DEG	QSMPS01	QSMPS	L3BT5		0	Nu
U	BD0DEG	QSMPS02	QSMPS	L3BT5		22	1
U	BD0DEG	QSMPS03	QSMPS	L3BT5		44	3
U	BD0DEG	QSMPS04	QSMPS	L3BT5		66	4
U	BD0DEG	QSMPS05	QSMPS	L3BT5		88	6
U	BD0DEG	QSMPS06	QSMPS	L3BT5		0	8
U	BD0DEG	RP01	RP_T		10.16.46.132	67	13
U	BD0DEG	STMHPS01	STMHPS	L3BT5		22	9
U	BD0DEG	STMHPS02	STMHPS	L3BT5		40	11
U	BD0DEG	STMVPS01	STMVPS	L3BT5		31	10
U	BD0DEG	STMVPS02	STMVPS	L3BT5		49	12
U	BD0DEG	TMP01	TMP_T		10.16.46.132	67	13
U	BD100DEG	BAG01	BAG_M		10.16.46.134	67	13
U	BD100DEG	CNVCT01	CNVCT_M		10.16.46.134	96	Nu
U	BD100DEG	DUMPCTRL01	DUMPCTRL	L3LN1		41	Nu
U	BD100DEG	IP01	IP_M		10.16.46.134	67	13
U	BD100DEG	LTV01	LTV_M		10.16.46.134	67	13
U	BD100DEG	PMGV01	PMGV_M		10.16.46.134	67	13
U	BD100DEG	QM01	QM	L33G1		20	Nu
U	BD100DEG	QM02	QM	L33G1		42	Nu

Grid View Form View Print Data

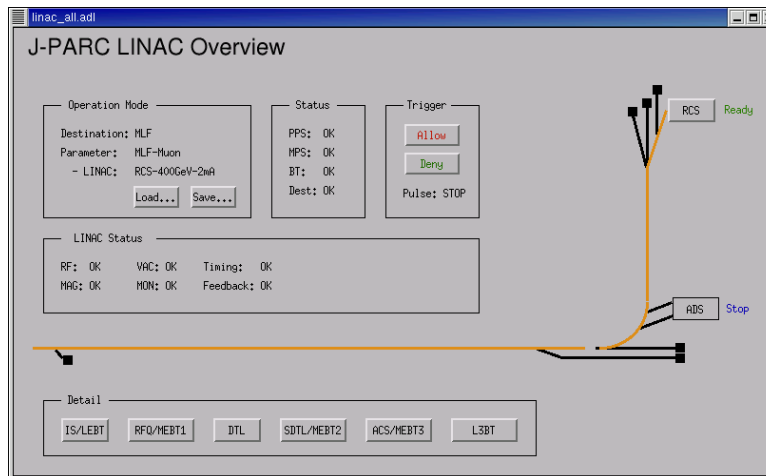
Records fetched: 374/374

LIMIT 1000 OFFSET 0

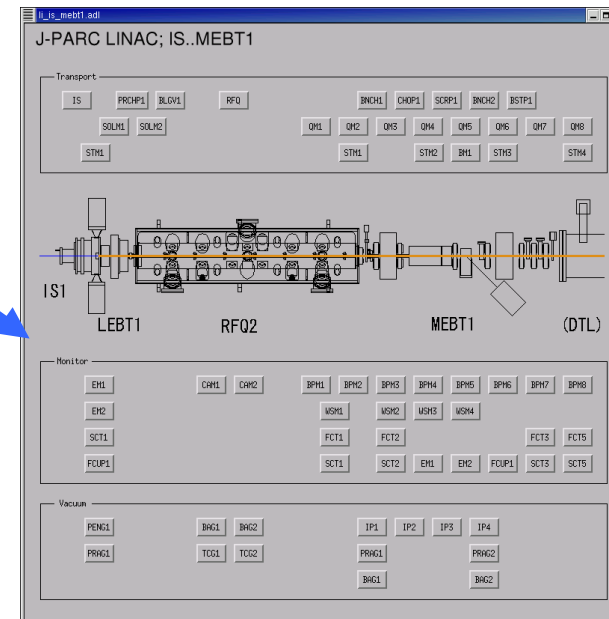
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J-PARC Control (cont.)

- **Toward the Linac Beam Commissioning (Dec.2006)**
 - **Java-based OPI and RDB have been implemented by JAEA team**



**Launcher software
dedicated for J-PARC Linac**



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J-PARC Control (cont.)

- **Recent Activities by KEK Team**
 - **2005: Moved from Tsukuba to Tokai**
 - **Discussion with 50GeV MR device groups**
 - **To determine device I/F in detail**
 - **RDB for 50GeV MR – R&D started**
- **Announce: Man-power of KEK team**
 - **Nov.2005: J.Odagiri moved from KEKB to J-PARC**
 - **Jan.2006: N.Yamamoto moved from KEKB to J-PARC**

Bit More ..

Better to know about J-PARC

- **J-PARC Logo** was decided (Mar.2006)



- **KEK Tokai-campus** (since Apr.2005)
 - Number of people working in Tokai is increasing
23(Apr.05)-->**60(now)**->100(FY2006-end)->**150(future)**
Numbers include Acc./Phys./Office members
 - **Shuttle-bus between Tsukuba and Tokai**
started in Jun.2005,
 - **80 min.** / one way, 2x2 round-trips

**We enjoy working in Tokai very much,
because ..**



**Return bus in the evening of 13.June
Leave Tokai at 6 p.m. for Tsukuba**

Everyday is picnic by bus. Will you join us ?

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